

A RETROSPECT:

An Address

TO THE MEDICAL AND SURGICAL GRADUATES OF
THE UNIVERSITY OF GLASGOW,
ON 27TH JULY, 1893.

BY

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A RETROSPECT.

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GENTLEMEN,—Allow me, in the first place, on behalf of my colleagues, to offer you our congratulations on the attainment of your degrees. After a long period of study, and after enduring the test of many examinations, you are now members of the medical profession, and you are about to pass from these halls and cloisters to the wider arena of public life. I have no doubt you will carry away with you many pleasant memories of college life, and of friendships formed with your fellow students and with your teachers. On the whole, the period of life spent at college is a very happy one. The only dark and anxious days in it are those associated with examinations, times when the mind is oppressed by a surfeit of ill-digested facts, and when forebodings and fears make life miserable. Some time ago the young King of Servia, by a *coup d'état*, placed himself at the head of affairs, and it is said that one of his first resolutions was to continue his studies, but, with wise forethought, he determined at the same time to suppress all examinations. This action was exactly what any sensible young man would take were he placed in the same position, and, for my part, I am of opinion that neither he nor the public would be much the worse for this mode of exercising the royal prerogative! However, in your case, all these artificial trials are things of the past; you have received the hall-mark; you are now to enter on wider duties, and to submit to far more serious tests that will determine success or failure in life.

As I considered what I should say to you to-day, my mind naturally went back to the time when I graduated in Aberdeen twenty-nine years ago. A graduation is a ceremony

that can never be forgotten, and when one looks back to it through the vista of years, old thoughts crowd into the memory—the hopes, the fears, the anticipations of success, the uncertainty as to the future—and shadowy forms of revered teachers and fellow students, many of whom have long since passed away, flit before the mind's eye. The day of your graduation is one to which you will often turn, and you will mark it as one to which you will refer many events, and from which you will date the beginning of a new career. In my own case, I have chosen the date, nearly thirty years ago, as a starting point, and I asked myself the question, to what extent has the medical art developed during that period? We all know that science in general, and, in particular, the sciences of anatomy, physiology, and pathology, on which surgery and medicine are based, have made astonishing progress, and that an army of workers is now daily employed in these fields of research. By the application of better methods, the rate at which knowledge is accumulating is accelerating every year, although it must be admitted that during the last two or three years there have been few discoveries of far-reaching importance. The question, however, of the advancement of the more practical side of medicine is the one which has occupied my attention in reviewing the years of my professional life, and although for many years I have not been engaged in the practical duties of my profession, I have always maintained that interest in its progress which the teacher of physiology in a large medical school ought to cultivate if he wishes to be in thorough sympathy with his pupils. It is a question that demands consideration, and I cannot conceive of one more likely to interest you at the outset of your professional career. It is a question also that interests the public, because, after all, the practical side of our art is that which is best understood and best appreciated by those who demand our professional services. Men and women desire you to help them in moments of suffering, and, if possible, to cure their diseases. They like practical men, and they naturally dread a doctor who tries to look, like Lord Thurlow, “more wise than it is possible for any man to be,” and still more the one who, when they seek him for the relief of pain, gives them a clinical lecture on the pathology of their disease, even although they may be so impressed by his erudition as to say, in the words of the couplet—

“These are diseases he must know the whole on,
For he talks of the peritoneum and of the colon.”

During the past two months, I have made a study of the question now placed before you, with the aid of the reports of the Registrar-General, of the reports of a few of the leading hospitals in our great cities, and of data supplied to me by professional friends, and I have found abundant evidence to show that there has been substantial progress along almost the whole line. I am quite aware of the dangers of dealing with statistics, and of how easy it is to draw fallacious conclusions from their study. I do not, therefore, rely solely on the statistical method, as applied to large numbers of cases, but I have checked the results of the figures by the statements made as to the diminished mortality of various diseases in the best books by standard authorities at my command, and where I have found that the opinions of the writer coincide with the results of statistical enquiry, I have thought it fair to come to the conclusion that certain diseases are more remediable now than they were thirty years ago, or the reverse.

In the first place, let me point out that there has been, during the time in question, a marked improvement in hospital construction and in the art of nursing. Hospital reform may be said to have originated in the *Reports of the Barrack and Hospital Committees* in 1861 and 1863, and also in the publication of Miss Nightingale's *Notes on Hospitals*, in 1864. The disastrous state of affairs in the British hospitals at Scutari, when the mortality reached between 400 and 500 per 1,000, due to excessive overcrowding and inefficient ventilation, led to a thorough investigation of the whole matter, and to the adoption of the pavilion system in the great majority of hospitals built since that date. The labours of Miss Nightingale also inaugurated the present system of training and of regulating the duties of hospital nurses, a system which now attracts considerable numbers of well educated women to the public service, and which is of inestimable benefit both to the sick and to the physicians and surgeons in charge.

It is hardly necessary to speak of the triumphs of sanitation. Contrast, for example, the mortality in several of our Scotch towns from zymotic diseases in 1860 and 1888. In 1860 the deaths were 22·14 per cent of the specified causes of death, while in 1888 the percentage was only 11·32. To put the matter in another form—

	1860.*	1888.†
	Deaths per 10,000.	Deaths per 10,000.
Edinburgh, . . .	393	17·7
Perth, . . .	533	17·9
Paisley, . . .	623	57·3
Glasgow, . . .	727	28·9
Greenock, . . .	802	20·8
Leith, . . .	850	19·3
Aberdeen, . . .	880	16·4
Dundee, . . .	1,033	17·5

Taking the eight Scotch towns together, in 1860 (which happened to be a year in which the average mortality from zymotic diseases was low) no fewer than 730 persons in every 10,000 of living persons died of these diseases, while in 1888 there was a loss of only about 24 in 10,000, or a saving of life (as compared with 1860) to the extent of 706 persons in every 10,000 living.† The facts are still more striking if we select certain diseases belonging to the zymotic class. Thus, in 1860, 2,344 persons died in Scotland of "typhus" in its varied forms (including typhoid fever, which was not then definitely differentiated from typhus), that is, in the proportion of 8·1 deaths in every 10,000 persons of the population, while in 1888 (also including typhoid or enteric fever and simple fever) there were only 1·9 in 10,000. Measles affords another illustration. In 1860 the proportion of deaths in 10,000 persons was 5·4, while in 1888 it was only 3·5 in the same number. In 1860 the mortality from scarlet fever was 10·1 deaths in 10,000 persons, but in 1888 it was only 1·8 of 10,000. Another scourge of childhood is whooping cough. In 1860 there were ascribed to it 12·5 deaths in 10,000 of population, and in 1888 the mortality had fallen to 4·3. Thus sanitary legislation and a better appreciation by the people of the importance of attention to details in matters relating to drainage, water supply, and

* *Sixth Report of Registrar-General for Scotland*, p. 37.

† *Thirty-fourth Report of Registrar-General for Scotland*, pp. 37 to 42 ; also Table xxx, p. 40.

‡ In 1860 the following diseases were included under the term zymotic : —Small-pox, measles, scarlatina, diphtheria, whooping-cough, diarrhoea, dysentery, cholera, typhus, croup, influenza, erysipelas, childbed fever, syphilis, purpura, infantile fever, rheumatic fever, worms, noma, hydrophobia, ague. In 1888 all the above diseases were included except purpura, rheumatic fever, worms, noma, and ague. The number of deaths per 10,000 from these latter diseases is so small as scarcely to affect the above remarkable result.

ventilation, as well as better methods of isolating the sick, have put an effectual check on the ravages of epidemics. Preventive medicine is one of the most attractive of the numerous departments of our art, and it is well depicted in a passage in the *Cyropædia* of Xenophon. "I believe, father, that I have men with me who are very able in the art of physie." "Child," replied the father, "the men you speak of are like the menders of torn garments; so, when people are sick, physieians cure them, but your care of health is to be of a nobler kind—it is for you to prevent the army from being sickly."

Let us now pass to the domain of surgery. During the period under review, this art has advanced to an extent that no one would have ventured to prophesy thirty years ago. The treatment of wounds has been revolutionised since, in 1860, and in the Royal Infirmary of Glasgow, Sir Joseph Lister first developed, on the purely scientific investigations of the great Frenchman, Louis Pasteur, the antiseptic system of surgery. Prior to this date, surgical fever, or pyæmia, or septicæmia, was the scourge of surgery. Even after simple operations, inflammation, accompanied by pain and suppuration, often occurred, and frequently the patient died, apparently from the action of poisonous matter absorbed from the wound, but the nature of the poison was unknown. Great efforts were made to combat this danger by improvements in the ventilation of the larger hospitals. Hospital blocks were spread over as large an area as possible, and cross ventilation was established. As I have said, public attention was attracted to the high mortality in hospitals overcrowded and badly ventilated, by the events of the Crimean war, and it is not far from the truth to remark that our sad experiences in Scutari prepared the way for the rise of antiseptic surgery. Lister detected the connection between the evils of open wounds and the fermentations, or other chemical changes, excited by living organisms in the air. These organisms, settling from the air on the raw wound, find a suitable nidus for their growth and development, changes of a putrefactive character are set up, and the poisonous substances thus formed are absorbed into the blood, and cause all the dangers of septicæmia. Having arrived at this scientific conception of the process, he then set about devising methods by which these organisms might be destroyed, or, still better, might be prevented from entering the wound from the moment it was made until it was healed. Such, in brief, is the antiseptic system, guided

by the germ theory, the greatest contribution, in my opinion, that has ever been made to our art, not excepting even the introduction of anæsthesia or the Jennerian practice of vaccination. Think of all that it means. Think of the operations that it has made possible—operations that the surgeon can now undertake with a fair hope of success. Think of the fact that surgical fever is now almost unknown. Think of its applications to abdominal surgery and to obstetrical practice.* Lives are daily saved by the application of this method, and suffering, which is something that cannot be measured, is daily spared to the human race.

As an example of the value of antisepticism in a kindred branch of medicine, let me quote from a letter I have received from my friend Dr. Priestley, of London:—"But it is in regard to the prevention of puerperal fever, as a result of a better knowledge of septic processes, that the most striking facts are apparent in this department of medicine. If surgery has benefited in this respect, as a result of the teaching of Pasteur and Lister, obstetric medicine has equally gained ground. It is scarcely too much to say that since the introduction of aseptic and antiseptic treatment, puerperal fever has been practically abolished in lying-in hospitals. At the last International Congress of Hygiene, I pointed out that, whereas, according to the well-known statistics of Le Fort, the mortality of all the maternity hospitals in England and abroad, before the introduction of the new system, was no less than 34·21 per 1,000 from puerperal fever, it is now reduced to less than 5 per 1,000. Taking the whole statistics available, the figures showed that more than 3,000 maternal lives had been saved in the short period since the introduction of antiseptics from these precautions alone."†

These are wonderful results. Young men are hero worshippers, and when they read of any one famous in war or in patriotism, in art or literature or science, they recognise that in this man there is something that calls forth their deepest feelings of admiration and respect, and that their lives would be complete if they could accomplish anything like the achievements of their hero. I know no man, gentlemen, in our profession or out of it, in our day, who has conferred such signal benefits on the human race as Lister has been privileged to bestow; and as I feel sure that you leave this place with full knowledge of the practical details of his method, I can wish nothing better for you than that you

* See letter from Dr. Priestley, Note A.

† See Appendix, Note A.

be also imbued with the spirit of scientific enquiry which has led to such brilliant results.

I now come to a more difficult part of our investigation—namely, that relating to advances in practical medicine, and I may first of all say that, wide as medical literature is, it is next to impossible to obtain statistical evidence as to the curability of many medical diseases. It is not sufficient, of course, to point to a steadily diminishing death-rate, because that may be attributable to other causes than improvement in medical practice. Statistics on a large scale are still wanting, for two reasons—First, it is only in comparatively recent years that our great hospitals have carefully registered all their cases in such a form as to be readily accessible; and, in the second place, there is no registration of ordinary cases of disease (excluding certain zymotics) in private practice, unless the patient dies. We have therefore few trustworthy data to go upon. In passing, let me say that it would be a great gain if there were a national method of registering all serious cases of illness. It is out of place here to indicate the evident difficulties in the way of such a project, or how these might be overcome. Already a beginning has been made by the British Medical Association with regard to some diseases, and I am not without hopes that the interests of the public may by and by warrant our legislators in devoting public money to the payment of medical practitioners for information communicated by them to a central bureau, there to be collated for the public good. Until we have some such system of registration it will be impossible to draw accurate conclusions as to the prevalence of many common but serious diseases, and as to the proportion of recoveries to deaths.

When we examine hospital statistics, it is sometimes difficult to form an opinion as to the ratio of deaths to recoveries, because it is the usual practice to enter the results under three heads—namely, relieved, cured, and died, and the presumption is that many of those discharged as relieved ultimately die of the diseases in their own homes. Bearing these statements in mind, I examined the records of the Royal Infirmary of Glasgow and of St. Bartholomew's Hospital in London, two great representative institutions, both supplied with physicians of high reputation. The general results are very interesting. Thus, diseases of the nervous system in 1864 gave 14·2 per cent of deaths, while in 1892 the percentage was only 8·3, showing a diminution of 5·9 per cent. Curiously, diseases of the respiratory organs give in both 1864 and 1892 the same figure—16 per cent

of deaths; and the same is noticeable with regard to diseases of the circulatory system, a mortality of 25 per cent appearing both in 1864 and 1892. In 1864, however, dropsies were included under the heading of diseases of the circulatory organs, and if we eliminate these on the ground that they may not all have had a cardiac origin, the percentage of deaths in 1864 is 20, while in 1892 it has increased to 25. Diseases of the genito-urinary system also show an increased mortality, rising from 10 to 20 per cent. Bronchitis in 1864 gives 6 per cent of deaths, and in 1892, 10·8 per cent. There is a diminution in phthisis—namely, from 20 per cent in 1864 to 18·5 in 1892. There is a striking diminution in pneumonia, the figures falling from 45 per cent in 1864 to 26 per cent in 1892. Bright's disease, on the other hand, shows a great rise, passing from 14 per cent in 1864 to 30 per cent in 1892. Taking all the medical cases together, the mortality in 1864 was 13 per cent, and in 1892 it was 13·71, thus showing a slight increase.

Look now at the figures from St. Bartholomew's Hospital. It is very remarkable, in the first place, that the percentage of deaths in the medical wards comes out in nearly the same figures, being 11·11 per cent in 1864, and 11·36 in 1892, again showing a slight increase in the mortality, as we have seen was the case in the Royal Infirmary of Glasgow. Comparing the two years 1864 and 1892, we find, as regards diseases of the nervous system, a rise from 13·8 to 25 per cent; phthisis shows a fall of from 55 to 46·5 per cent; heart cases, a rise from 30 to 33 per cent; bronchitis, a fall from 29·9 to 25 per cent; pneumonia, a fall from 31 to 25 per cent; genito-urinary diseases, a fall from 26·1 to 25 per cent; and Bright's disease, a fall from 40 to 33 per cent.

I have found it impossible to obtain corresponding data from other hospitals, because systems of registration and classification vary considerably; but where figures have been available, even in isolated instances, these figures correspond closely enough with those obtained from the records of the two great hospitals in London and Glasgow as to show that these institutions may be taken as fairly representative.

I am quite aware that these figures are by no means conclusive, although, on the whole, they support the view that the treatment of certain diseases has improved. Thus, of seven groups of diseases there is a slight balance to the good. It is a very small balance certainly, but it is on the right side. We can examine this question, however, on a broader basis, by collating the facts given in the reports of the Registrar-

General. This has already been done by Dr. George Blundell Longstaff, in his suggestive book entitled *Studies in Statistics*, a book bristling with figures, but, at the same time, fascinating by virtue of its literary graces and scientific insight. I have a certain satisfaction in being able to say that, before I came upon the mine of information in Dr. Longstaff's work, I had collated some of the figures for myself, and had reached substantially the same conclusions. The general decline of the death-rate in recent years is very striking. From 1838 to 1875 inclusive, the death-rate averaged 22·3 per 1,000, but during the eight years from 1876 to 1883 inclusive, it fell to 20·3. Further, it has been shown by Mr. Noel A. Humphreys that this indicates that the mean duration of male life has been increased by 2 years, and that of female life by 3·4 years, as compared with the English life table (that forms the basis of systems of life insurance), and this increased life is lived between the ages of 20 and 60 years, the most useful period of human existence. Can this diminution in the death-rate be accounted for? and to what extent may we attribute it to improvements in the treatment of diseases?

In the first place, I selected the more common diseases, ascertained the number of deaths from each disease in 1864 and 1887 (a period of twenty-three years), and, taking the population of the country as the basis, calculated the proportion of deaths to 1,000,000 of living persons. These figures I give in a table, with which I need not trouble you,* but the general result is this:—There is a rise in the mortality from cancer, inflammation of the brain, insanity, chorea, diseases of the heart, bronchitis, pleurisy, diabetes, and kidney diseases; whilst there is a fall in the mortality from zymoties, diarrhoea, tabes, phthisis, apoplexy, paralysis, epilepsy, convulsions in children, pneumonia, female diseases, childbirth, and accidents. These are my own results.

On examining a table, constructed on a similar method, that appears in the *Registrar-General's Report*,† I find that, if we compare 1858 with 1883, the chief diseases rising in mortality are cancer, diabetes, brain diseases, heart diseases, and, to a small extent, diseases of the respiratory organs; whilst those falling in mortality are—small-pox, measles, scarlet fever, typhus, enteric fever, whooping-cough, diphtheria, diarrhoea, erysipelas, thrush, phthisis, convulsions in general, croup, and

* Appendix, Note B.

† *Forty-Sixth Annual Report of Registrar-General for England* (Abstracts of 1883), p. lx.

diseases of the liver and of the digestive organs. Here, in twenty diseases, or groups of diseases, there has been, during a period of twenty-five years, a fall in the mortality in fifteen and a rise in five.

Finally, I take a valuable table, collated by Dr. Longstaff, from the *Registrar-General's Forty-third Annual Report* for the quinquennium 1875 to 1879, compared with averages of quinquennium 1850-54, showing the rise and fall in the death-rates per 1,000,000 persons living.

RISE AND FALL IN THE DEATH-RATES PER 1,000,000 PERSONS LIVING IN ENGLAND AND WALES, FROM VARIOUS CAUSES OR GROUPS OF CAUSES. AVERAGES OF QUINQUENNium 1875-79, COMPARED WITH AVERAGES OF QUINQUENNium 1850-54.*

RISEN PER 1,000,000 LIVING.		FALLEN PER 1,000,000 LIVING.	
Lung diseases,	1,213	Phthisis,	694
Heart,	696	Developmental disease, . .	617
Brain diseases (excluding		Fever,	596
convulsions,	378	Dropsy,	405
Kidney diseases,	229	Convulsions,	342
Cancer,	191	Cholera,	287
Diphtheria and croup, . .	69	Small-pox,	197
Tabes mesenterica,	65	Scarlet fever,	173
Whooping-cough,	45	Tubercular meningitis, . .	111
Rheumatism,	45	Sudden death—cause unas-	
Liver diseases,	32	certained,	101
		Diarrhea,	85
		Diseases of stomach and	
		intestines,	68
		Measles,	64
		All other causes,	299
Total,	2,963		4,012
Balance, a fall of 1,049.			

The diseases showing a rise in mortality are placed in the following order:—Lung diseases, heart, brain diseases (excluding convulsions), kidney diseases, cancer, diphtheria and croup, tabes mesenterica, whooping-cough, rheumatism, and diseases of the liver; those showing a fall are, in order—Phthisis, developmental diseases, fever, dropsy, convulsions, cholera, small-pox, scarlet fever, hydrocephalus or tubercular meningitis,

* *Studies in Statistics, Social, Political, and Medical.* By George Blundell Longstaff, M.A., M.D. (London: E. Stanford. 1891), p. 230.

sudden death (cause unascertained), diarrhoea, diseases of stomach and intestines, measles, and diseases of other kinds not enumerated in this list. Thus, of twenty-four diseases, or groups of diseases, enumerated, there has been a diminished mortality in fourteen, and an increased mortality in ten; but the total result, after balancing the account, is a saving in life in England and Wales alone of 24,000 persons per annum.

There are several remarkable facts brought under our notice when we study these results. First, the increased mortality from lung diseases; second, the great fall in the mortality from phthisis. The latter disease has declined in death-rate for males to the extent of 14 per cent, and for females to 22 per cent, and the fall in mortality has been greatest between the ages of 15 and 35—that is to say, lives have been saved at a period of life when they were most valuable to the community. There has thus been a saving of life from this fell disease in one year of 3,966 males and 6,806 females, or a total of 10,772. We now know that phthisis is a disease associated with the tubercle bacillus, and we can attack it in a very direct fashion. There can be no doubt that the saving of life is largely due to preventive medicine, but it is affected by curative medicine as well, and I believe it will be more so in the future. Here medicine has achieved a triumph, worthy of being compared with the triumphs of surgery, but much yet remains to be done. We must study more carefully those peculiarities of human tissues that make them favourable for the development of the bacillus; we must learn how to alter, by inoculative or other procedures, the quality of those tissues; and, finally, we must adopt measures for destroying the bacillus after it has found a lodgment in vital organs.

I have already alluded to the enormous saving from death caused by fevers of various kinds. Here there is a fall of 57 per cent in the mortality, and the number of lives saved is over 12,000 per annum. No doubt this saving will be largely claimed by sanitary reformers; indeed, we admit that the fall in the death-rate from fever is their great triumph, but some of the credit is due to curative treatment. The method of treating fevers has greatly improved since 1864. As an illustration, let me only mention one advance in treatment that will be imperishably associated with the name of my distinguished colleague Professor Gairdner. In the old days, and mainly under the influence of Dr. Todd, of King's College, London, typhus cases in hospital were subjected to

a stimulant treatment of receiving, say, 60 oz. of wine and 7 oz. spirits daily, and the mortality was from 17·5 to 25 per cent, that is to say, even in Dr. Todd's own hands, 1 in every 4 died. In 1863, Dr. Gairdner introduced a modified treatment into the Glasgow Fever Hospital, where the mortality under the old stimulant treatment was about 17½ per cent. The stimulants were reduced to 2¼ oz. of wine and 2½ oz. of spirits, and the mortality dropped to 10 per cent. In 1864, Dr. Russell, our learned medical officer of health in Glasgow, treated, on this principle, 300 cases of typhus, and had a mortality of only 11·2 per cent. Here, then, there was a striking diminution in mortality by the adoption of a different mode of treatment. Typhus is now rare. We have almost annihilated an enemy that at one time slew its thousands per annum; but even if it should get a hold on a portion of the community, the patients have, under Gairdner's treatment, nearly three times a better chance of recovery than under the old *régimé*.

The mortality from scarlet fever and measles has also notably diminished. This, I think, is chiefly to be attributed to improved methods of treatment, because preventive medicine has not done much to control these diseases. If parents co-operated more heartily with teachers in schools and with the public authorities in notifying the occurrence of these diseases, and in adopting measures of complete isolation, the mortality from both would suffer a still greater diminution.

The increase in the death-rate from diseases of the lungs has been considerable, amounting to 11,894 per annum. These diseases are most fatal in the first five years of life and after the age of forty-five. In the first place, the increase may be partly accounted for by the fact that pulmonary diseases carry off many old people, and as the number of old people is increasing annually, the deaths from pulmonary diseases caused by the vicissitudes of our climate must also increase. It is to be feared, however, that the increase is largely owing to the neglect of children among our poorer classes. Our sanitary authorities can, to a considerable extent, force such people to attend to cleanliness, and they can supply them with fresh air, but they cannot compel them to clothe more warmly the little children that shiver in our streets and closes.

The mortality from heart disease and dropsy, from brain diseases, and from kidney diseases has considerably increased. No doubt many causes are at work. These organs have to bear the strain, not only of the struggle for existence that is yearly increasing, but also of the depraved habits of large

classes in the community. Intemperance is a potent factor in producing this state of things. It is now known that, while the absolute quantity of alcohol consumed in Great Britain is on the increase, the relative quantity, or, to put it more accurately, the quantity per head, is diminishing. This indicates a growth of sobriety, more especially in certain classes of society, but it is to be feared that the lower classes are not becoming more temperate but the reverse, and that their habits contribute to the increase observable in diseases of the great organs. The effect of daily contaminating the blood with alcohol is a matter largely of degree, but there can be no doubt of the fact that there is a daily dose which slowly but surely works disastrous effects upon brain, and vessels, and kidneys.

I shall only briefly refer to one other fell disease, cancer. It would appear that this malady is increasing. It is credited with an increase of 2,848 deaths per annum, and of these persons seven-eighths were above the age of forty-five. A part of this increase may be accounted for by better diagnosis and more careful registration, but, making this allowance, there still appears to be a steady increase. Perhaps it is the most serious malady the surgeon and physician have to face. They stand powerless in its presence, so far as curative measures are concerned, and yet one cannot help thinking that some day its successful treatment will be another of the triumphs of our art. The reason I have for taking this optimistic view is that the evidence appears to be accumulating in favour of the opinion that it is a parasitic disease, due to a lowly organism finding its way into our tissues from the outer world. If this be established, then we will be in a better position for successfully dealing with it.

The investigation I have placed before you brings out another remarkable result which may be pondered over by those who think that improvements in the art of medicine will necessarily prolong the duration of human life far beyond the time allotted to him by the Psalmist. We see that lives are being saved from fever, phthisis, scarlet fever, and diarrhoeal diseases; but, on the other hand, they are being lost at an increasing rate from pulmonary, cardiac, and renal diseases, and from cancer. Putting it broadly, we are saving young and valuable lives, but we are losing older and less valuable ones. Now, if the diminution in the mortality from the diseases that destroy young lives continues, it will reach zero, and no more can be saved; but, on the other hand, if the increase in the mortality from the diseases that destroy older lives

increases, there is no saying where it may end, and the result is that human life, instead of being prolonged, as one would naturally expect, will, by and by, diminish in duration. We will then reach the condition of society when more people will survive the perils of early years, while fewer will reach advanced old age. It is a satisfaction, however, that in this state of things, the amount of life useful to the community will not suffer diminution,* because lives will be saved while they are more valuable, not only to the State, but to their more immediate relatives. Then the spectacle of a young man cut down at the outset of his career will be a rare event, and not a sadly common occurrence, as it is in our experience. We are far from having reached this point of social evolution, but a study of vital statistics in present conditions appears to indicate that it is inevitable, or at all events very likely to occur.

Let me remark, in passing, that one of the most overwhelming facts that comes to light in the study of vital statistics is the rate at which the population of the world is increasing. For example, England and Wales alone add to the population of the world every day about one thousand persons—that is to say, there is this surplusage of births over deaths. One thousand little mortals march to the front every day, so that at the end of a year there is an army of 365,000 clamouring for food, and by and by for work. This is the growth of the national strength. Considerably over half a million human beings pass into eternity every year from England and Wales alone, but their places are taken by the next generation, and the next generation is steadily increasing in numbers. This afflux and efflux of human life, by the inevitable laws of birth and death, is a great and impressive phenomenon, calculated to awaken many reflections.

On the whole, then, I think I have been able to show that if we are to draw conclusions from the diminution in the death-rate of various diseases, we are fairly entitled to say that both preventive and curative medicine have advanced during the last thirty years. I admit that, as regards curative medicine, the case is not strikingly strong, except in special instances, such, for example, as the treatment of acute rheumatism by salicylates, devised by Maclagan in this country and by Stricker and Riess in Germany, in 1876, a treatment which has, I believe, practically abolished the prolonged cases with cardiac complications we were familiar with thirty years ago.

* Longstaff, *Studies in Statistics*, p. 245.

I can only refer to the marked improvement that has taken place in the treatment of many diseases not fatal to life, but sufficient to make existence almost intolerable. The growth of specialism, while not an unmixed benefit, has undoubtedly improved the treatment of diseases of the eye, ear, throat, nose, and skin, and all the improvements imply more speedy cure and greater relief from suffering. The treatment of the insane also shows a great advance—in the architecture and equipment especially of our asylums; in the large grounds that now surround these noble institutions, in which the patients can obtain relaxation and variety of work; and in the total abandonment of all systems of seclusion and almost of compulsory restraint. The cell of the maniac does not now exist, and instead of being left alone in his frenzy, he is allowed often to stray in the open air, accompanied by an attendant, and the sights and sounds of nature bring calm and rest to his troubled brain. This is no fanciful picture, and it indicates the lines along which medicine now strives to bring relief to the mental sufferer. It may not be easy by statistics to prove that insane cases are more curable, but at all events the life of the lunatic is made tolerable, and even to approach happiness.

But I need not say to you that it is not the sole function of a physician to cure disease, using the word *cure* in the narrow acceptance in which it is generally understood. Many diseases can never be cured. When pathological changes pass beyond a certain limit, no power on earth can efface them, and the complicated bodily organism can work no longer. But, even in these circumstances, the cultured physician has important duties to perform. By his skill in diagnosis, he prepares the patient and his friends for the inevitable, and thus enables the dying man to perform his last duties to those depending on him. This is no mean function. It is a duty that can only be rightly done by a good man who has a chord of sympathy in his heart for those who hang upon his words, and it is one the performance of which often calls forth, in the sick chamber, a quiet and impressive heroism that raises our opinion of the dignity of human nature. It may require even more courage to face the inevitable in the silence and gloom of the sick chamber than amid the excitement of the battlefield or the horrors of the sinking ship. Still more, even in dealing with incurable disease, we can soothe pain and diminish suffering. Time will not permit me to refer in detail to the numerous antipyretics that have been added to our armamentarium during the last thirty

years. Starting from pyridin, we have kairin, antipyrin, thallin, acetanilide or antifibrin, pyrocin, methyl-phenyl-acetamide or exalgin, thermifugin, and antiseptin—all bodies now artificially formed, and all having important physiological properties that can be used for the subjugation of fever and the relief of suffering. Then we have the artificial hypnotics, chloral, chloral-hydrate, bromal hydrate, iodaldehyde, and butyl-chloral-hydrate—substances that may be regarded as the fruits of the numerous researches that have been made into the connection between chemical constitution and physiological actions. With such drugs at your service, you will be able to smooth the bed of suffering to a far greater extent than was in the power of your predecessors.

The total result, then, of the progress of medical science during the last thirty years may thus be briefly summed up:—(1) Thousands of lives saved annually by preventive medicine; (2) greater accuracy in diagnosis, and a sounder knowledge of the natural history of disease; (3) more rational treatment; (4) many diseases caused to pass through their stages more speedily, thus saving time; (5) better means of relieving pain and suffering; and (6) making disease, even when incurable, more tolerable, and at last smoothing the passage to the Elysian fields.

Let me say in closing that it is much to be regretted that the relations of our profession to the public are not all we could wish. It is quite true there is ample recognition of the large philanthropy of the medical profession, and of the self-denying and sometimes heroic labours of medical men, but occasionally there is a want of appreciation of our efforts as regards the scientific aspect of medicine, whilst even educated men show a hankering after what they call *curing* disease. There is still in the public mind a belief that disease is an entity, something that must be driven out of the body or conquered by a specific remedy. The layman has a difficulty in grasping the scientific conception that disease is not a thing but a perverted process, a process that must be guided back to normal lines by judicious methods founded on a sound knowledge of its natural tendencies. There is also a sentimental disposition to put barriers in our way. Men do not yet see that each department of medical science (like all departments of science) must be allowed to pursue its own path, and to acquire facts by its own methods, irrespective of practical results. Hence the impatience and the tendency to check the free play of scientific enquiry. Bacon, in the *Advancement of*

Learning, admirably sums up the whole matter, and his words are as true in our day as they were in his:—"Almost all other arts and sciences are judged by acts or masterpieces, and not by the successes and events. The lawyer is judged by the virtue of his pleading, and not by the issue of the cause. The master of the ship is judged by directing his course aright, and not by the fortune of the voyage. But the physician, and perhaps the politician, hath no particular acts demonstrative of his ability, but is judged most by the event, which is ever but as it is taken; for who can tell, if a patient die or recover, or if a state be preserved or ruined, whether it be art or accident? And, therefore, many times the impostor is prized, and the man of virtue taxed. Nay, we see the weakness and credulity of man is such, as they will often prefer a mountebank or witch before a learned physician."

I have now given you a short account of a thirty years' war, a war against disease and suffering. You are about to take part in the fray, and I hope that, thirty years after this, you will be able to report progress as substantial and as real as I have been privileged to do to-day. You must not suppose that absorption in the active duties of your profession precludes you from doing scientific work. In the ranks of general practitioners there are striking examples that prove the contrary. Lockhart Clarke first taught histologists how to unravel the complicated structure of the spinal cord, and Parker pursued abstruse studies in morphology, while they were both busy practitioners in London. Dr. Macmunn has a large practice in Wolverhampton, but he finds time to add to our knowledge of animal pigments. One other remarkable instance occurs to me—that of my dear friend and fellow-student, the late Dr. James Ross of Manchester. Early immersed in a busy practice in a midland district, he began those studies of the nervous system that laid the foundations of his great work on this subject, and amid many vicissitudes, he always found time and energy for the contemplation of scientific and philosophical questions. With such examples before you, I wish you to leave this university with a strong faith in the future of your profession, combining in your mental attitude a spirit of keen criticism with one of eager interest in new facts and new views of things. Though

"The old order changeth, yielding place to new,"

we may be certain there will be a harvest to every seeker after truth, and as truth is not to be found only in the class-

rooms of a university, in the wards of a hospital, nor in the laboratories of science, but also in every walk of professional life, one and all of you may hope to add something to human knowledge, and to contribute something to human progress.

My older friends and colleagues present will pardon me for addressing to them the speech of Ulysses when he resigned the sceptre into the hands of Telemachus, and tempted the seas once more in quest of new adventures :—

“ Free hearts, free foreheads—you and I are old :
Old age hath yet his honour and his toil ;
Death closes all, but something ere the end,
Some work of noble note, may yet be done.

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’Tis not too late to seek a newer world,
Push off, and sitting well in order,
Smite the sounding furrows.”

APPENDIX.

NOTE A.

*Letter from Dr. Priestley, London, to Dr. M'Kendrick,
dated 18th June, 1893.*

"You ask me concerning the progress which has been made during the last thirty years in obstetric medicine and gynæcology.

"I can now look back for a longer period than thirty years, and I think the progress which has been made since I began practice has been quite equal to that in medicine or surgery—in some respects, indeed, it has outpaced them.

"In midwifery proper, the improvements in the construction of forceps and instruments used as an alternative for the old operation of craniotomy have steadily tended to the diminution of maternal mortality in child-birth, as is shown in the later bills of mortality. The same may be said in reference to the measures taken for obviating the serious consequences of hæmorrhages before, during, or after delivery. A better knowledge of the anatomical and pathological conditions producing these complications has led to improved methods of procedure in these, as well as other morbid states pertaining to the puerperal period.

"But it is in regard to the prevention of puerperal fever, as the result of a better knowledge of septic processes, that the most striking results are apparent in this department of medicine. If surgery has benefited in this respect as the results of the teaching of Pasteur and Lister, obstetric medicine has equally gained ground. It is scarcely too much to say that, since the introduction of aseptic and antiseptic treatment, puerperal fever has been practically abolished in lying-in hospitals. At the last International Congress of Hygiene I pointed out that whereas, according to the well known statistics of Le Fort, the mortality of all the maternity hospitals in England and abroad, before the introduction of the new system, was no less than 34·21 per 1,000 from puerperal fever, it is now reduced to less than 5 per 1,000. Taking the whole statistics available, the figures showed that more than 3,000 maternal lives had been saved in the short period since the introduction of antiseptics from these

precautions alone. This, I think, is one of the most striking triumphs of preventive medicine, and belongs exclusively to the department of obstetrics. I regret to say that as yet the same satisfactory results do not appear in private practice throughout this country. Dr. Boxall, *pere*, who is one of our most trustworthy statisticians in this department, shows that there is still a lamentable prevalence of puerperal fever in the country districts, which seems to indicate either that antiseptic precautions are less easily enforced in private practice than in hospital, or else that medical men are less circumspect in private practice than the circumstances require. Whatever the explanation, it may be well to direct the attention of those about to enter medical practice to the fact that here lies a field for their careful study in the future, and that a neglect of precautions which experience has proved to be so essential to the welfare of puerperal patients entails a very grave responsibility.

"In treating diseases of women there have also been marked advances. I recollect when a great surgical authority in London asserted that anyone who attempted the removal of an ovarian tumour by abdominal section ought to be tried for manslaughter. Now we hear of seventy ovarian operations in succession, in the hands of Dr. Thomas Keith and Sir Spencer Wells, without a single death! and in the entire range of gynecological operations the improvement has been most remarkable. Many more lives have been saved than formerly, or in cases where life was not actually threatened, the woman, from being a permanent invalid, has been restored to active usefulness again. It should not be forgotten, in writing to you in Scotland, that the initiative in many of these points of progress was largely due to the genius of the late Sir J. Y. Simpson.

"Perhaps I may be allowed to say, as a word of caution to your new graduates, that in my view the advances in gynecological operations have thrown the balance of treatment in diseases of women somewhat unduly over to the surgical side. Gynecologists have been charged with being seized by a *furor operandi*, and as being too prone to look upon every female ailment as calling for some surgical interference. One distinguished writer pathetically begged his brother physicians, when treating diseases peculiar to women, to bear in mind that women had other organs besides those in the pelvis.

"There can be no doubt that improvements in any field of work may give for a time an undue impulse in a certain direction; but extremes gradually right themselves, and reason eventually prevails. A caution to new graduates not to be guided too exclusively by mechanical or local theories of causation in diseases peculiar to women may be useful; but I am sure, from the retrospect of this branch of work, they will find abundant encouragement for hopefulness, and may look confidently to still further advances in the future."

NOTE B.

Causes of Death.

	1864. Deaths to 1,000,000 living.	1887. Deaths to 1,000,000 living.
Zymotics,	5,770	1,658
Diarrhœa,	798	717
Cancer,	394	606
Tabes Mesenterica,	289	249
Phthisis,	2,578	1,591
Inflammation of Brain,	195	316
Apoplexy,	501	565
Paralysis,	515	417
Insanity,	32	88
Chorea,	3	4
Epilepsy,	117	106
Convulsions,	1,282	767
Diseases of Heart, &c.,	1,094	1,643
Bronchitis,	1,894	2,085
Pleurisy,	46	57
Pneumonia,	1,189	1,097
Total Diseases of Respiration,	3,663	3,713
Diseases of Digestive System,	1,016	1,068
Diabetes,	32	62
Kidney Disease,	265	493
Female Diseases,	63	47
Child-birth,	123	61
Accidents,	734	519
Murder and Manslaughter,	20	12
Suicides,	64	80

